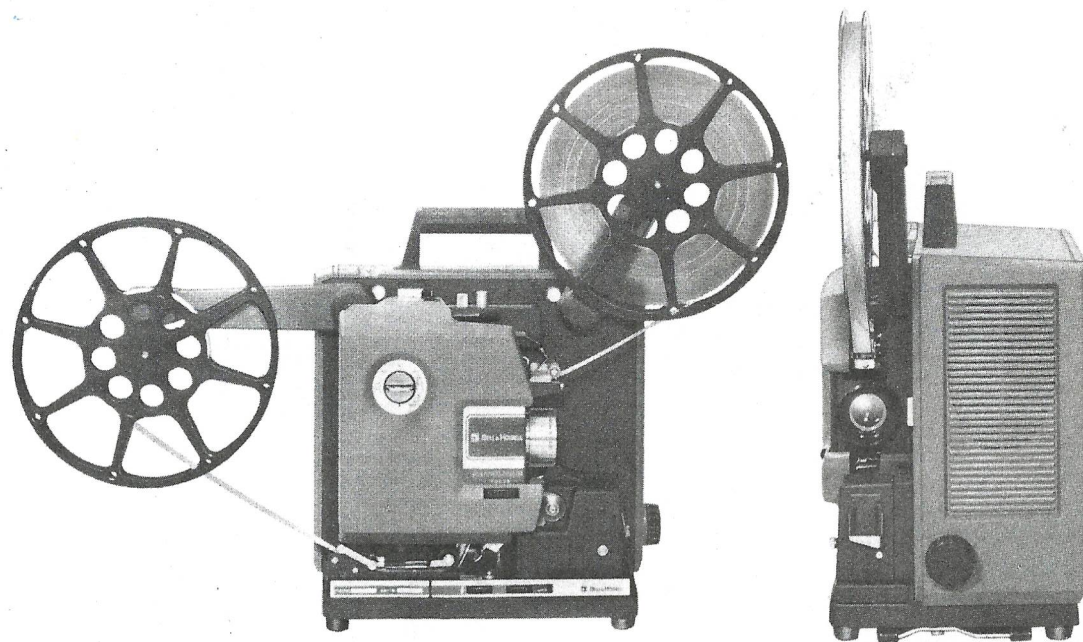


how to operate your
AUTOLOAD[®]
FILMOSOUND[®]
16mm SOUND PROJECTOR

INSTRUCTIONS FOR
MODELS 1585-1590-1592

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IMPORTANT: Please read these instructions carefully before operating this projector.

IMPORTANT SAFEGUARDS

WHEN USING YOUR PHOTOGRAPHIC EQUIPMENT, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED, INCLUDING THE FOLLOWING:

1. READ AND UNDERSTAND ALL INSTRUCTIONS.
2. CLOSE SUPERVISION IS NECESSARY WHEN ANY EQUIPMENT IS USED BY OR NEAR CHILDREN. DO NOT LEAVE EQUIPMENT UNATTENDED WHILE IN USE.
3. CARE MUST BE TAKEN AS BURNS CAN OCCUR FROM TOUCHING HOT PARTS.
4. DO NOT OPERATE EQUIPMENT WITH A DAMAGED CORD OR IF THE EQUIPMENT HAS BEEN DROPPED OR DAMAGED—UNTIL IT HAS BEEN EXAMINED BY A QUALIFIED SERVICEMAN.
5. POSITION THE EQUIPMENT IN SUCH A WAY SO AS NOT TO BLOCK ANY AIR INTAKE OR EXHAUST OPENINGS.
6. IF AN EXTENSION CORD IS NECESSARY, A CORD WITH A SUITABLE CURRENT RATING SHOULD BE USED. CORDS RATED FOR LESS AMPERAGE THAN THE EQUIPMENT MAY OVERHEAT. CARE SHOULD BE TAKEN TO ARRANGE THE CORD SO THAT IT WILL NOT BE TRIPPED OVER OR PULLED.
7. ALWAYS UNPLUG EQUIPMENT FROM ELECTRICAL OUTLET WHEN NOT IN USE. NEVER YANK CORD TO PULL PLUG FROM OUTLET. GRASP PLUG AND PULL TO DISCONNECT.
8. LET EQUIPMENT COOL COMPLETELY BEFORE PUTTING AWAY. STORE THE POWER CORD PROPERLY IN THE STORAGE AREA PROVIDED.
9. TO PROTECT AGAINST ELECTRICAL SHOCK HAZARDS, DO NOT EXPOSE THIS EQUIPMENT TO RAIN, MOISTURE, OR OTHER LIQUIDS.
10. TO AVOID ELECTRIC SHOCK HAZARD, DO NOT DISASSEMBLE THIS EQUIPMENT, BUT TAKE IT TO A QUALIFIED SERVICEMAN WHEN SOME SERVICE OR REPAIR WORK IS REQUIRED. INCORRECT REASSEMBLY CAN CAUSE ELECTRIC SHOCK HAZARD WHEN THE EQUIPMENT IS USED SUBSEQUENTLY.

SAVE THESE INSTRUCTIONS

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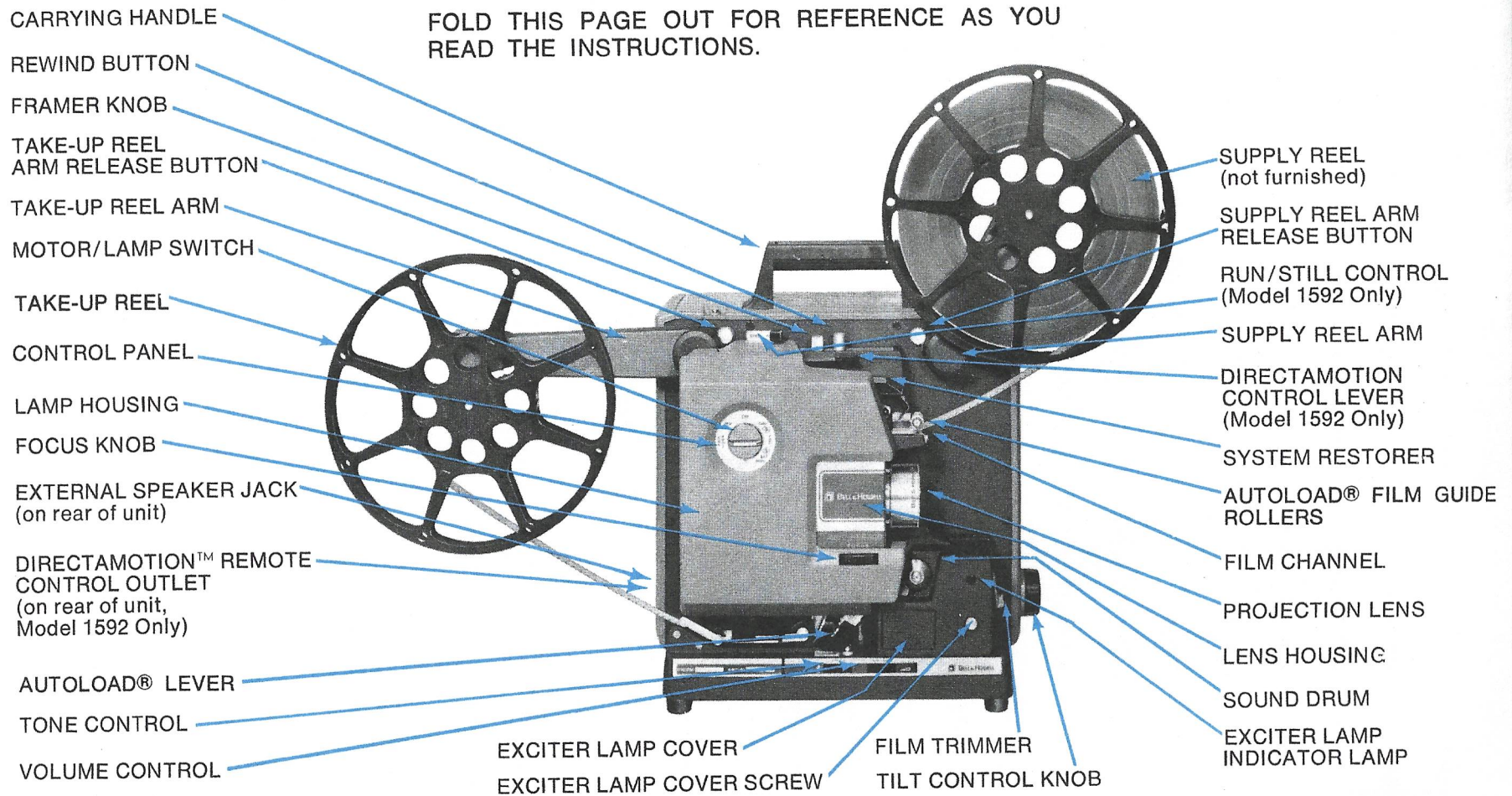
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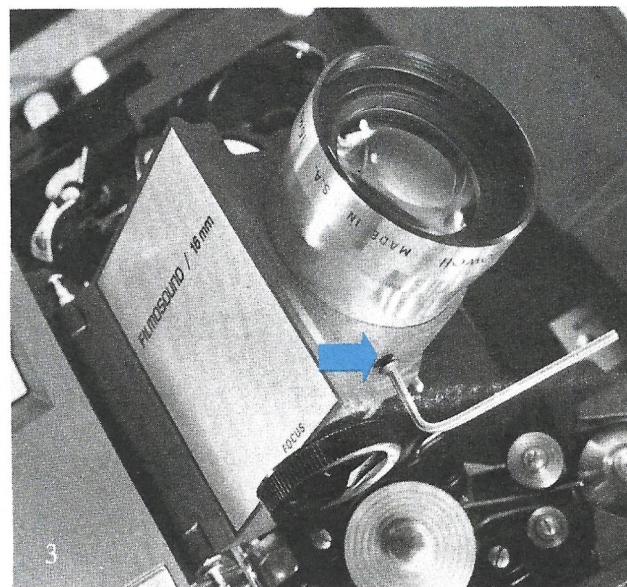
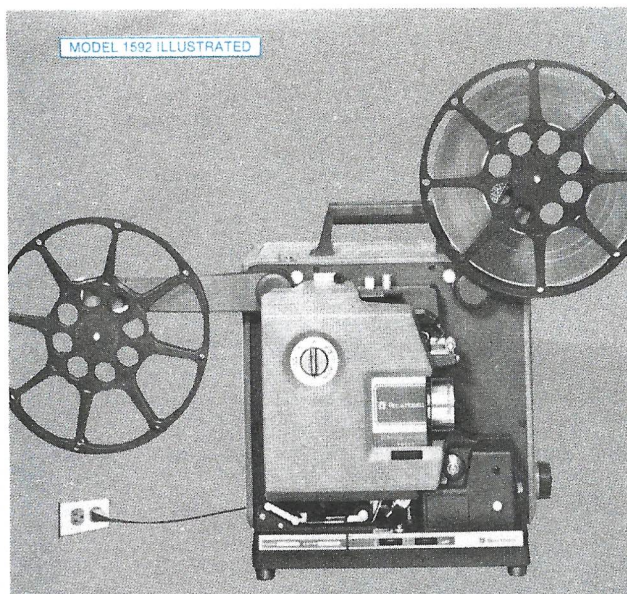
MODEL 1592 ILLUSTRATED

THE INSTRUCTIONS APPLY TO ALL MODELS UNLESS INDICATED OTHERWISE.

Minor changes in the appearance of the equipment may not be shown in these illustrations.

FOLD THIS PAGE OUT FOR REFERENCE AS YOU READ THE INSTRUCTIONS.





SETTING UP THE PROJECTOR

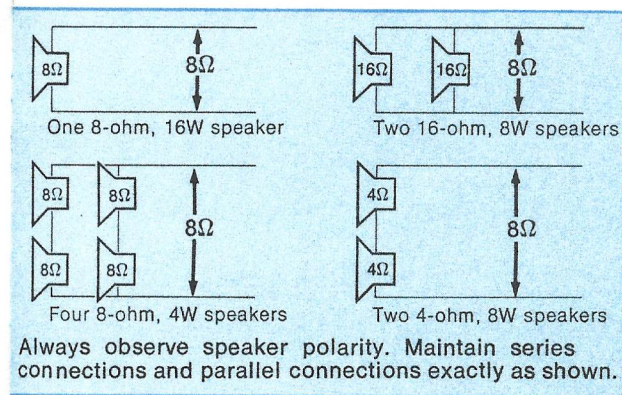
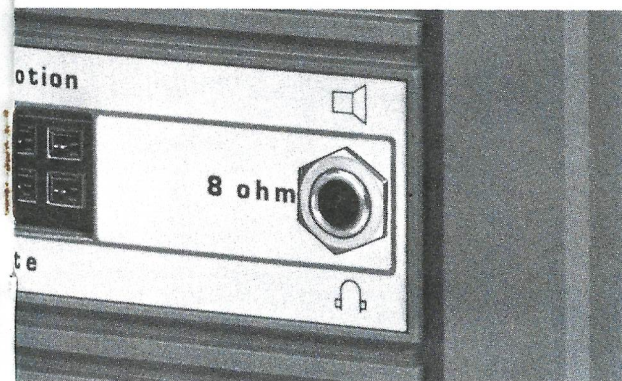
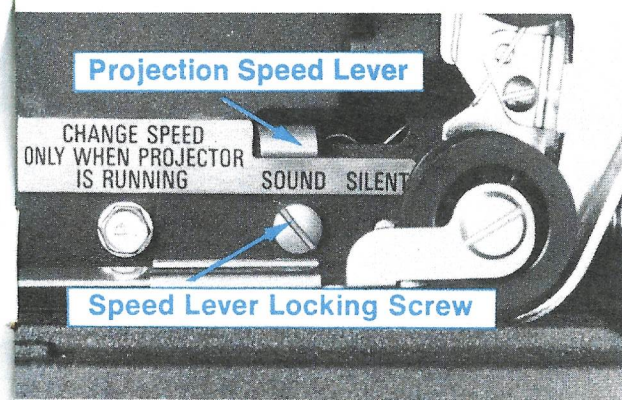
Place the projector on a sturdy table or stand at the position from which you will be projecting. Be sure the projector is high enough to clear the audience. A projection distance table will be found on page 24. When the projector is set up—

1. Unlatch the cover and remove it from the unit.
2. Unwind the power cord from its storage recess and plug it into a 120-volt 60-Hz **GROUND**ED outlet.

IMPORTANT: If an adapter is used, be sure the green wire on the adapter is attached to the screw on the wall outlet plate for proper grounding. Have a trained electrician install the adapter and check the outlet wiring to be sure there is no shock hazard. Faulty wiring may cause damage to the unit and personal injury to the operator.

3. Swing the **Take-Up Reel Arm** and **Supply Reel Arm** up to the positions shown. They will automatically lock into place.
4. Place the reel of film to be shown on the **Supply Reel Arm** spindle and an empty reel on the **Take-Up Reel Arm** spindle.
5. Turn the **Motor/Lamp Switch** past FORWARD (marked ③) to the PROJ position. Adjust the **Tilt Control Knob** to center the light area on the screen, then turn the switch to OFF.

LENS LOCKING SYSTEM—To discourage unauthorized removal, the projection lens may be secured in the lens housing with a Bristol screw and wrench (supplied with the projector). To install the screw, pull the **Lens Housing** out (see page 15) and insert the screw in the threaded hole at the bottom of the housing. Have the lens focused all the way in when inserting the screw. To remove the lens, just back the screw out with the wrench. Store the wrench in a secure location.



SETTING UP THE PROJECTOR (continued)

SPEED CHANGING INSTRUCTIONS—This projector operates at either the sound speed of 24 frames per second or the silent speed of 18 frames per second. The **Projection Speed Lever** is locked into the sound speed (24 fps) with the **Speed Lever Locking Screw**. To change the speed from sound to silent, proceed as follows:

1. Remove the **Speed Lever Locking Screw** (see illustration at left).
2. Plug in the projector and turn the **Motor/Lamp Switch** to FORWARD (3) so the motor is running.
3. With the motor running, move the **Projection Speed Lever** to SILENT.

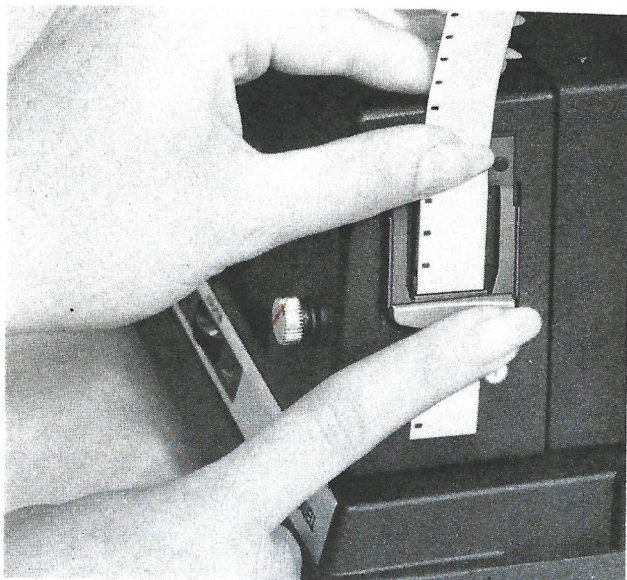
To prevent damage to the projector, always be sure the projector's motor is running before moving the **Projection Speed Lever**. When the projector is being operated in the SOUND position, replace the **Speed Lever Locking Screw** to prevent accidental movement of the lever. If the lever is in SILENT, store the screw in a safe place.

EXTERNAL SPEAKER JACK—To prevent damage to the projector's amplifier, read and understand these instructions on the use of external speakers. Consult your Bell & Howell dealer or a qualified serviceman if you have any further questions.

The **External Speaker Jack** on the rear of the projector is used to plug in an auxiliary speaker or speaker system having a standard ¼" phone plug. Optimum performance and sound quality is obtained when using a speaker, or combination of speakers, with a total effective impedance of 8-OHMS, and a minimum total power rating of 20 watts. (See the diagram at left.) Reliable operation may also be obtained when using a total load impedance other than 8-OHMS, provided it is not less than 4-OHMS.

The amplifier is electronically protected against abnormal output load conditions, and will shut down when operating with an output load of 3-OHMS or less. Activation of this protection circuit results in loss of sound and turns off the Exciter Lamp. When this occurs, turn off the projector and correct the output fault condition, after which showing may be resumed. Turning off the projector for a few seconds resets the protection circuit.

USE WITH A PUBLIC ADDRESS SYSTEM—Before connecting this projector to a public address system, consult your dealer or qualified serviceman. Proper electronic matching must be provided to prevent system or projector damage. A special instruction sheet for this type of installation may be obtained by writing to the General Service Department, Bell & Howell Company, 7100 McCormick Road, Chicago, IL 60645. If possible, include a schematic of the system amplifier and specify your projector model number.

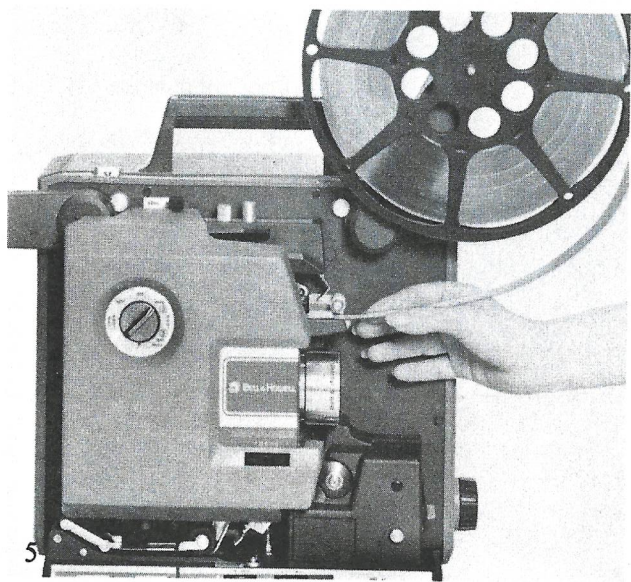


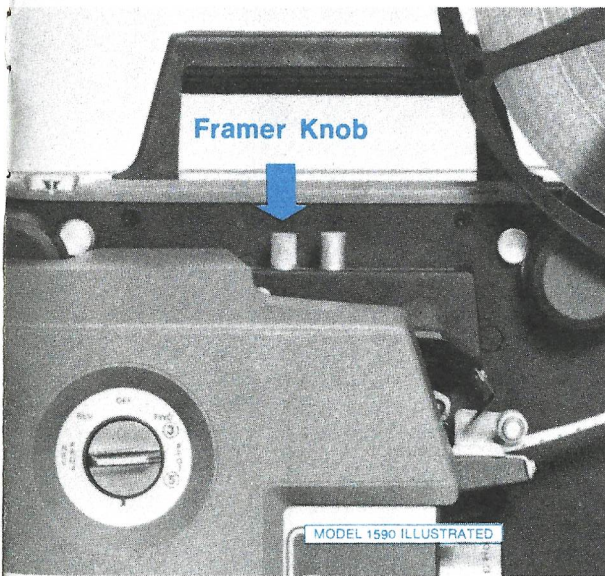
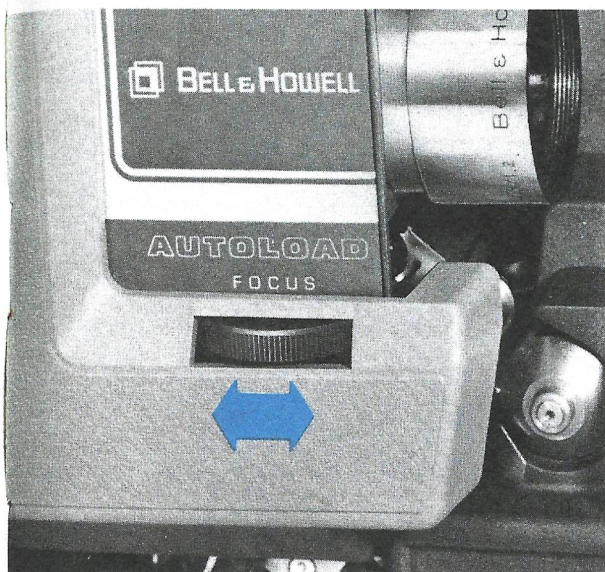
EASY STEPS TO USING THE AUTOLOAD SYSTEM

Once the projector is set up for use, follow these steps for automatic film threading.

1. Trim the end of the leader with the **Film Trimmer**. Inspect the first three feet of the film leader. It must be undamaged and free of tape or obstructions.
2. Push the **Autoload Lever** toward the front of the projector until it locks into the forward position.
3. Turn the **Motor/Lamp Switch** to the FORWARD position.
4. Insert the leader into the **Film Channel** until it engages the sprocket and feeds in by itself. After approximately 2 feet of leader has passed through the projector, pull lightly on the end of the leader until a "click" is heard, which releases the threading mechanism, then turn the switch to OFF. Attach the leader end to the **Take-Up Reel** and rotate the reel clockwise to take up the film slack.
5. Turn the **Motor/Lamp Switch** to the PROJECT position and the picture is now projected on the screen. Use the **Focus Knob** to sharpen the image and readjust the **Tilt Control Knob** and **Framer Knob** if needed, to center the image on the screen.

NOTE: For suggestions on helping to assure film-threading and projection reliability, see the film condition and trouble-shooting information on pages 19, 20, and 21.





OPERATING THE PROJECTOR

VOLUME CONTROL—Keep the **Volume Control** at a low setting while the film is being threaded. When the title appears on the screen, and sound begins, turn the control up to a comfortable listening level.

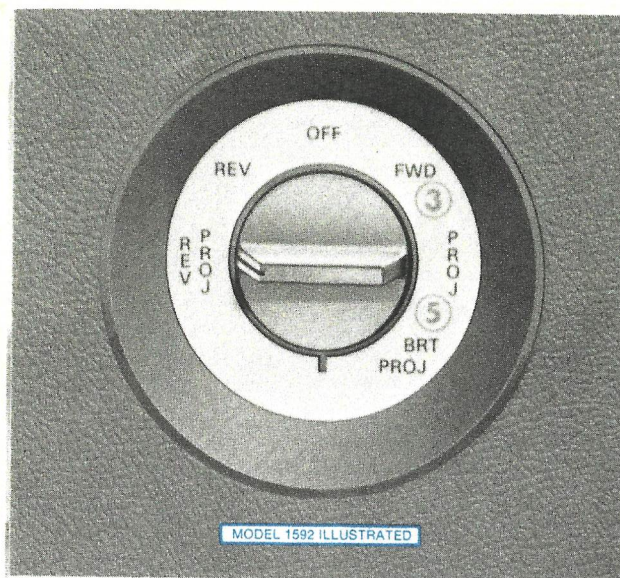
STONE CONTROL—Adjust this control for the most pleasing tone and to suit the room acoustics. The 0 setting is the balance between bass and treble.

FOCUS KNOB—This knob may be moved in either direction to sharpen the image on the screen. It may be necessary to readjust the focus if several types of film are being shown on the same reel.

FRAMER KNOB—If either the top or bottom of the picture is cut off and if a frame separation line appears on the screen, adjust the **Framer Knob** in either direction until the image is centered properly. It may also be necessary to adjust this knob when you switch to reverse projection (see page 7).

AUTOMATIC LOOP RESTORER—Torn perforations or bad splices may sometimes cause a loss of the lower loop below the film gate. If this occurs, the **Automatic Loop Restorer** will correct this loop loss and reset the proper lower loop size automatically.

SYSTEM RESTORER—If a larger portion of film is damaged and if tension is lost around the sound drum, press down firmly on the **System Restorer** and hold it down for at least one second. This will normally restore the film to its proper threading path when the projector is running in FORWARD only. If a very large portion of film is damaged, the projector must be turned off and the damaged film should be removed and spliced. See the manual unthreading information on pages 11-12 and the manual threading instructions on pages 9-10. No loop restoration is possible during reverse projection.



OPERATING THE PROJECTOR (continued)

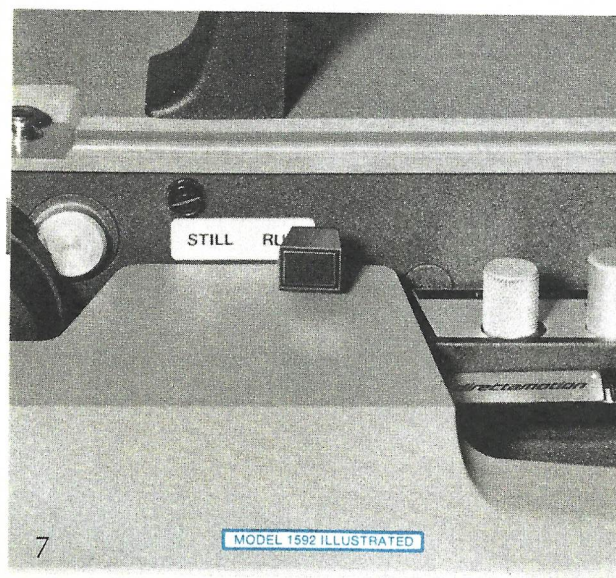
REVERSE PROJECTION—To show the film in reverse or to back the film up to a previous scene, turn the Motor/Lamp Switch counterclockwise to the OFF position, pause momentarily in this position, then continue turning past the REVERSE position to the REV. PROJ. position. Reframe if necessary. The sound system of the projector is disconnected when showing films in reverse or when showing still or Directamotion pictures with Model 1592.

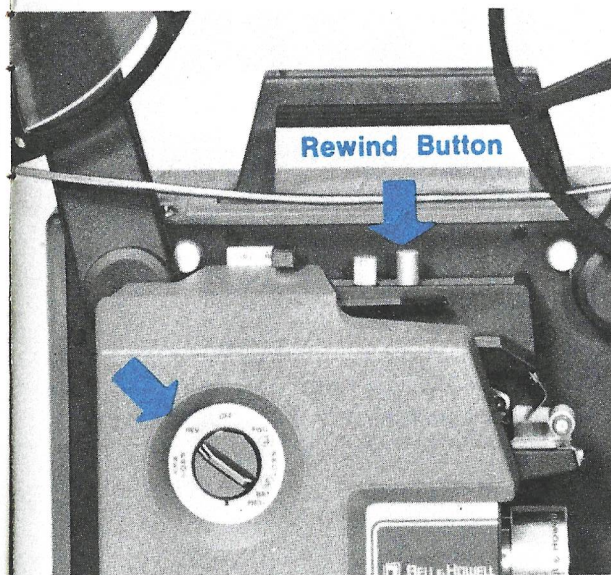
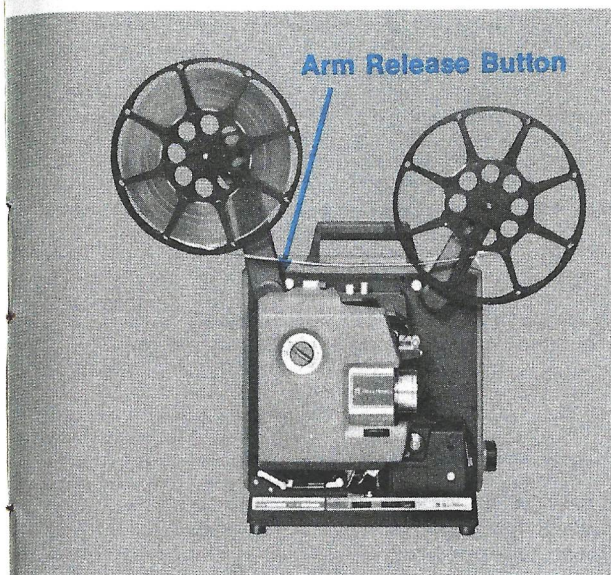
NOTE: When switching between the FORWARD and REVERSE switch positions, a momentary pause at OFF is necessary to allow the motor to stop and change direction. If the switch is rotated rapidly, the motor will not change.

BRIGHT-NORMAL SELECTION (Models 1592 and 1585 ONLY)—This feature has been provided for those occasions when optimum screen illumination is required. The FWD ③ position gives regular illumination for projection under normal conditions and also prolongs the life of the projection lamp. The BRT PROJ ⑤ position gives added illumination when films are shown in large auditoriums with long projection distances.

STILL PICTURE (Model 1592 ONLY)—This projector has a two-position **Run/Still Control** which is located on top of the lamphouse cover. For regular FORWARD or REVERSE projection, this control should be set to the RUN position. For STILL projection, move this control to the STILL position while the projector is running. **See caution note on page 13.** This STILL POSITION is also used for Directamotion operation with the Model 1592.

NOTE: When showing a STILL or Directamotion picture, the image will be dimmed slightly by a heat absorbing screen to prevent damage to the film. Further information on the Directamotion feature will be found on page 13. Be sure to return the **Run/Still Control** to RUN for film threading and regular showing.





REWINDING THE FILM

After the film showing is completed and all the film is on the **Take-Up Reel**, turn the **Motor/Lamp Switch** to OFF.

Follow these five simple steps and the film is ready to show again—

1. Support the full **Take-Up Reel** with your left hand and lift it up slightly. Press the **Take-Up Reel Arm Release Button** and swing the arm up to the vertical REWIND position (it will lock into place).
2. Take the end of the film from the **Take-Up Reel** and attach it to the **Supply Reel**, from the underside as shown. The attachment is accomplished by inserting the film end in the slot in the reel hub. Rotate the **Supply Reel** counterclockwise about two turns to secure the film on the hub.
3. Turn the **Motor/Lamp Switch** to the REVERSE position and the film will begin to rewind.
4. Press and hold down the **Rewind Button** momentarily on the top of the projector to speed up the film rewinding.
5. As soon as all the film is back onto the **Supply Reel**, turn the **Motor/Lamp Switch** to the OFF position. Press the **Take-Up Reel Arm Release Button** to unlock the arm so it can be moved back down to the take-up position.

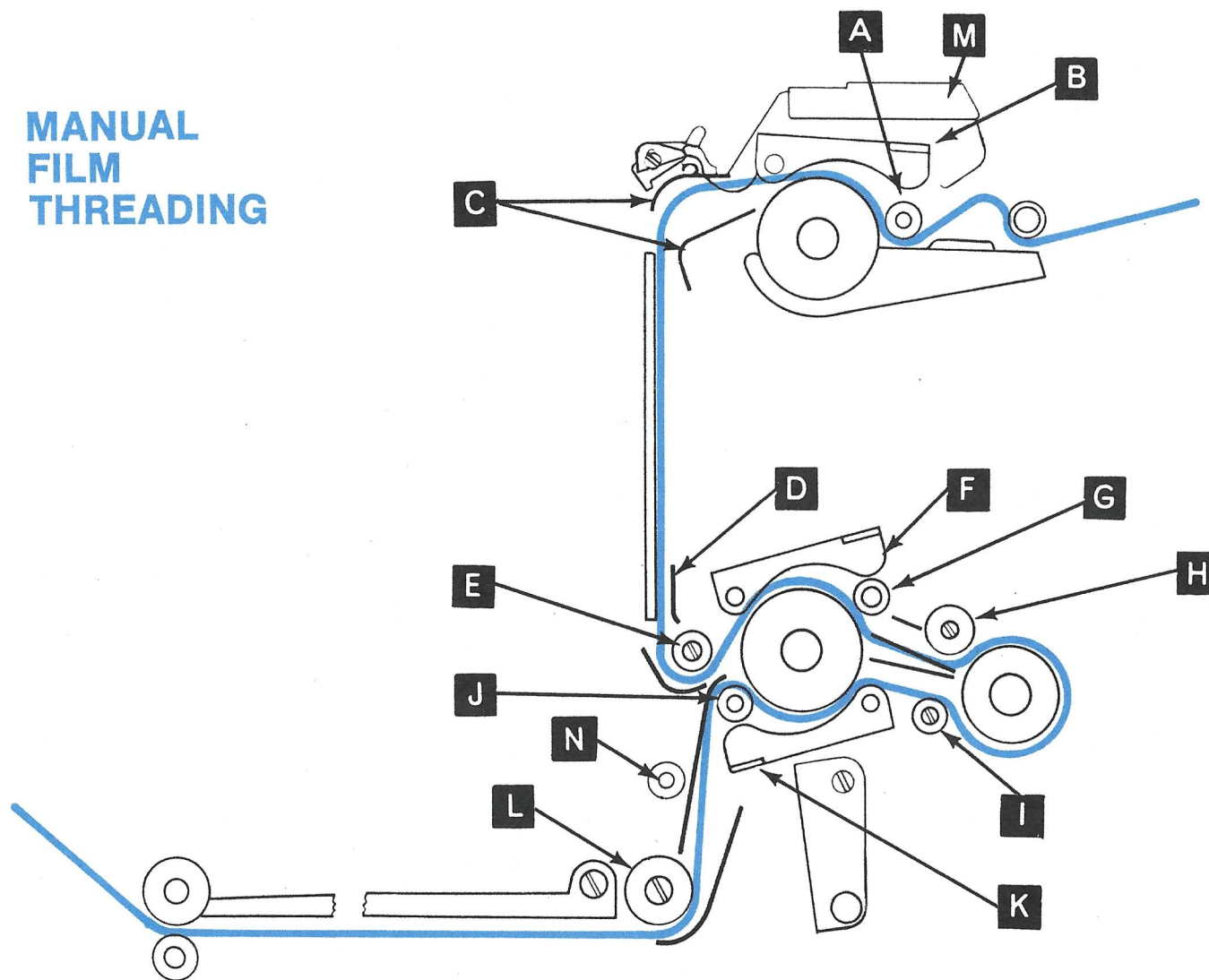
NOTE: The **Rewind Button** automatically disengages when the **Motor/Lamp Switch** is turned to FORWARD on your next show.

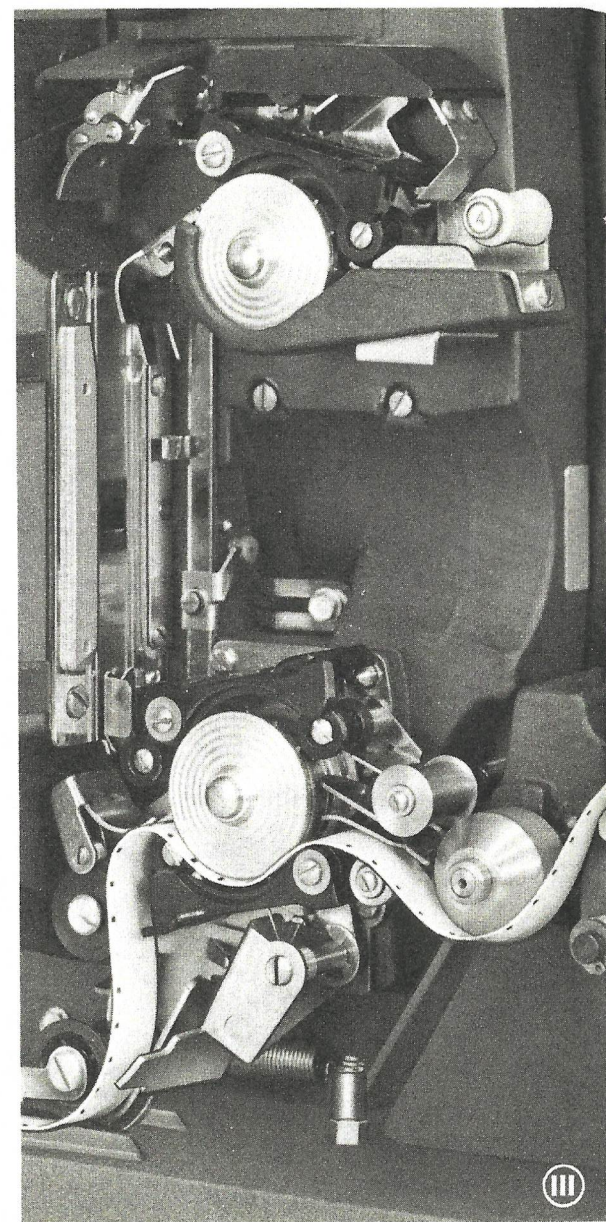
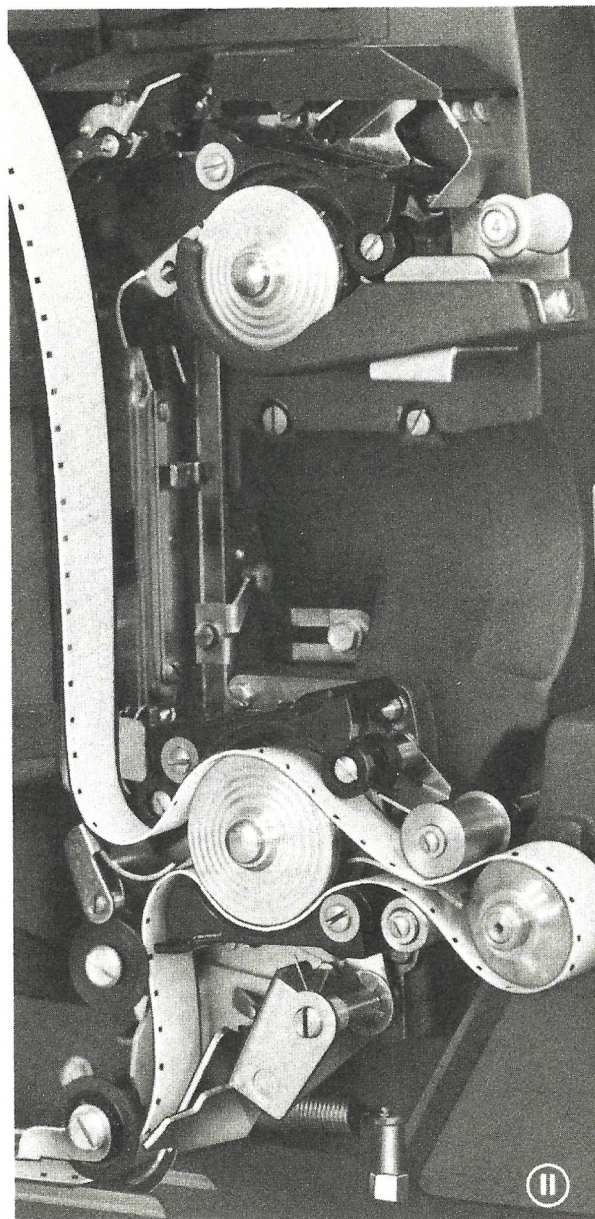
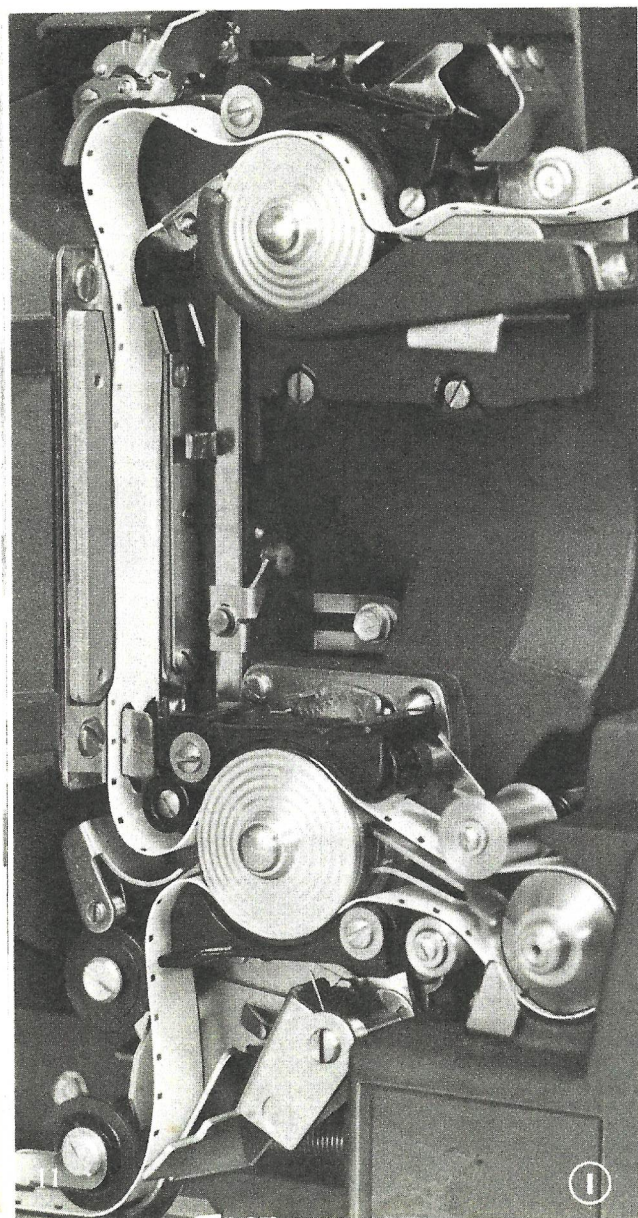
MANUAL FILM THREADING

Your 16mm projector features the Bell & Howell Autoload film threading feature, but the projector can conveniently be threaded manually when starting a film showing in the middle of a reel. Read the following instructions carefully and use the diagram at the right to check the threading.

1. Swing the **Lamp Housing** open by pulling it out from the front (on Models 1590 & 1592). Loosen the **Exciter Lamp Cover Screw** and remove the cover.
2. Open the hinged **Lens Housing** by pulling the lens toward you.
3. Push the **Threading Mechanism Release Roller L** to the rear of the projector until the threading mechanism clicks open.
4. Open all three **Sprocket Guards B F K**. This is done by pushing up on **B** and **F** and down on **K**.
5. To thread film in the projector, slip the film into the threading path from the side starting at the top blue roller marked ④. Place the film under the blue roller ④.
6. Place the film under roller **A** and engage the film sprocket holes on the sprocket teeth. Close the sprocket guard **B** by pushing it down.
7. Position the film in the center of the space between the film guides **C** and seat the film against the aperture plate between the edge guide rails. Be sure the film is against the aperture plate and behind the guide **D**.
9. Place the film under the roller **E**, engage the film sprocket holes on the sprocket teeth, and place the film under the roller **G**. Close the sprocket guard **F** and close the **Lens Housing**.
10. Place the film between the next two film guides as shown and under the tension roller **H**.
11. Continue threading the film around the **Sound Drum** and over the roller **I**. Place the film between the sprocket and the sprocket guard **K** and over the roller **J**. Pull on the loose end of the film to separate rollers **H** and **I**, then push the film in over the sprocket flange and engage the sprocket holes. Close the sprocket guard **K** by pushing upward.
12. Place the film in front of the roller **N**, under the **Threading Mechanism Release Roller L**, under the film guide and in the threading channel as illustrated, and attach it to the **Take-Up Reel**.
13. Check the film loop sizes both above and below the aperture as per the diagram for proper size.
14. If the loops are not properly formed, turn the **Motor/Lamp Switch** to the FORWARD position and immediately press the **System Restorer M** down and hold it down for one second to re-establish loops. Also see the restorer information on page 6.

MANUAL FILM THREADING

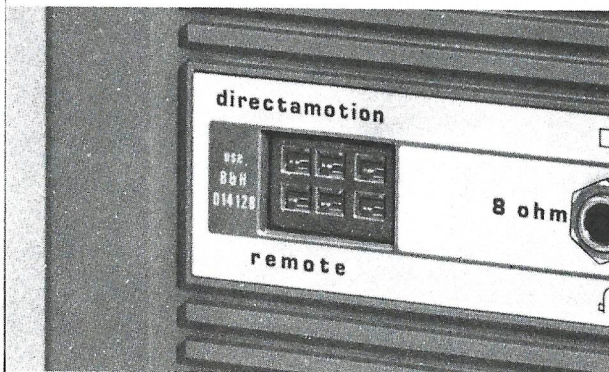
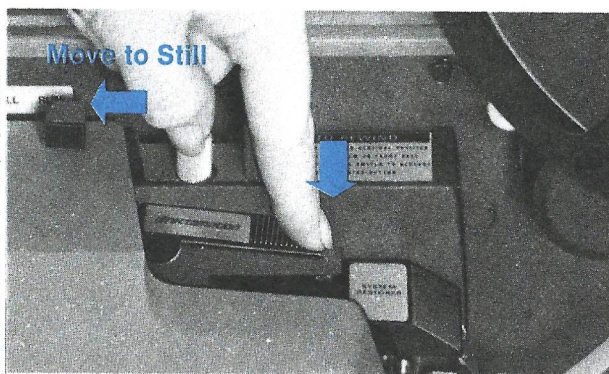




MANUALLY UNTHREADING THE FILM

1. To remove film in the middle of a reel, swing out the **Lamp Housing** (Models 1590 & 1592). Pull the **Lens Housing** out from the front, then loosen the **Exciter Lamp Cover Screw** and remove the cover.
2. Turn the **Supply Reel** clockwise to provide slack in the film.
3. Open the upper **Sprocket Guard** by pushing it up. Grasp the film close to the blue roller ④ with your right hand and ease it out from under the roller.
4. **FIGURE I** Grasp the film at the blue roller ④ with your right hand and just behind the sprocket with your left hand. Push your hands toward each other and ease the film off the sprocket teeth and out from under the **Sprocket Guide**.
5. **FIGURE II** Grasp the film under the loop restorer roller with the left hand. Place the index finger of the right hand on top of the sound drum and push it toward the sprocket. Ease the film off the sprocket teeth on the top of the lower sprocket.
6. Continue to ease the film out from under the stabilizing roller and off the sound drum.
7. **FIGURE III** Hold the film with the left hand at the rear of the lower sprocket and with the right hand below the sound drum. Push upward and ease the film off of the sprocket teeth at the bottom of the lower sprocket.
8. Slide the film out of the bottom film channel.
9. With the film now completely out of the mechanism and the reels still on the spindles, proceed with rewinding as explained on page 8.
10. Reinstall the **Exciter Lamp Cover**, close the **Lens Housing**, and swing closed the **Lamp Housing** (Models 1590 & 1592).

If the film was manually unthreaded because of poor splices or torn perforations, be sure the damaged section is removed and the film is spliced before rewinding it.



USING THE DIRECTAMOTION FEATURE

(on Model 1592 ONLY)

The Bell & Howell Filmosound Projector Model 1592 has the Directamotion feature for showing step-by-step frames of the film being projected. This feature operates in either forward or reverse.

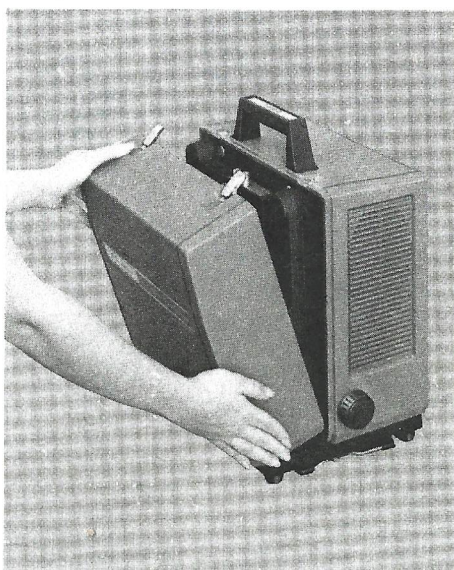
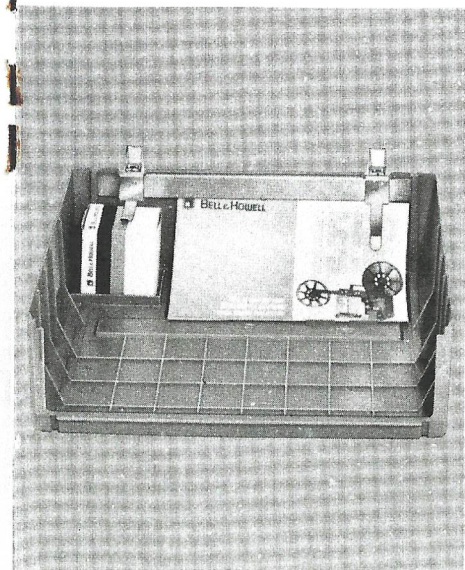
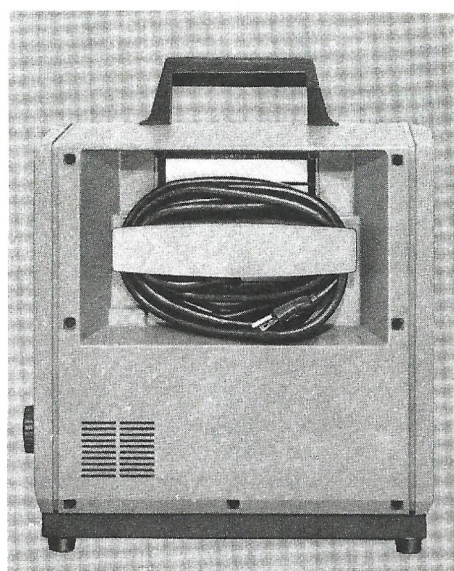
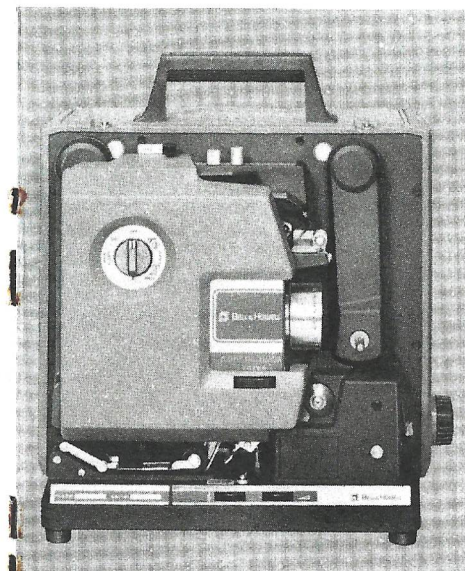
To advance the film frame-by-frame, first turn the **Motor/Lamp Switch** to either FORWARD PROJECT (for forward advance) or REVERSE PROJECT (for reverse showing). Then move the **Run/Still Control** to the STILL position.

To advance the film frames one at a time, just press and release the ribbed end of the **Directamotion Control Lever**. To advance several frames, or to show a length of film at a regular projection speed, press and hold the lever down. Releasing the lever will stop the film motion.

The Directamotion feature of the projector may also be operated with the accessory Directamotion Remote Control (see page 22). This remote control has a sliding button which is used in the same way as the **Directamotion Control Lever**. This accessory plugs into the socket on the rear of the projector.

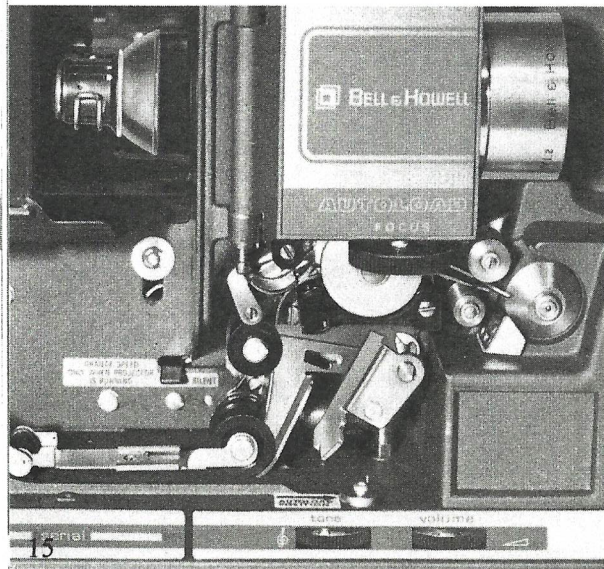
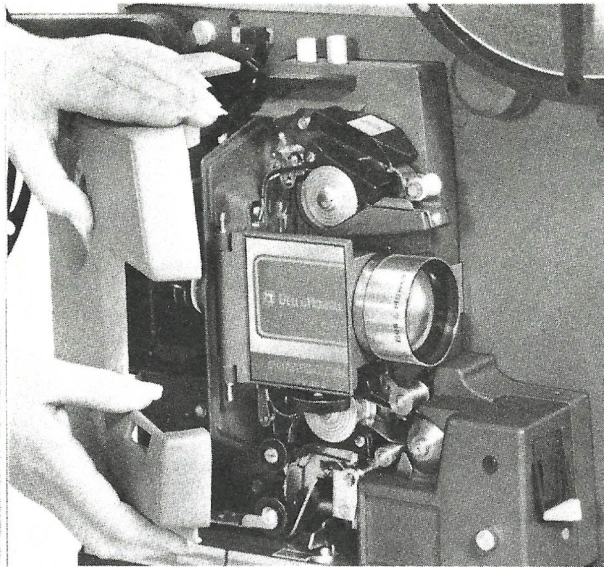
To resume normal projection after having used the Directamotion feature, just turn the **Run/Still Control** back to the RUN position.

CAUTION: The **Run/Still Control** should be moved to the STILL position only while the projector is running. Moving this control to the STILL position while the projector is turned off may cause damage to the film when the projector is started.



STORING THE PROJECTOR AFTER USE

1. Make certain the **Motor/Lamp Switch** is in the OFF position .
2. Remove the reels from the **Supply Reel Arm** and **Take-Up Reel Arm**.
3. Swing both reel arms down to their storage positions by unlocking the arms with their **Release Buttons**.
4. Lower the projector completely with the **Tilt Control Knob**. Be sure the **Run/Still Control** is in the RUN position. (Model 1592 ONLY).
5. Unplug the power cord from the wall socket and wind it around the cord retainer on the back of the projector.
6. Place the front cover on the projector by first fitting the cover's tabs into the recesses in the projector base. Swing the top of the cover into place and fasten it securely with the two latches.
7. For protection during storing and carrying, an accessory cover is available. This vinyl cover also has a pocket for storing the take-up reel. See the accessory information on page 22.



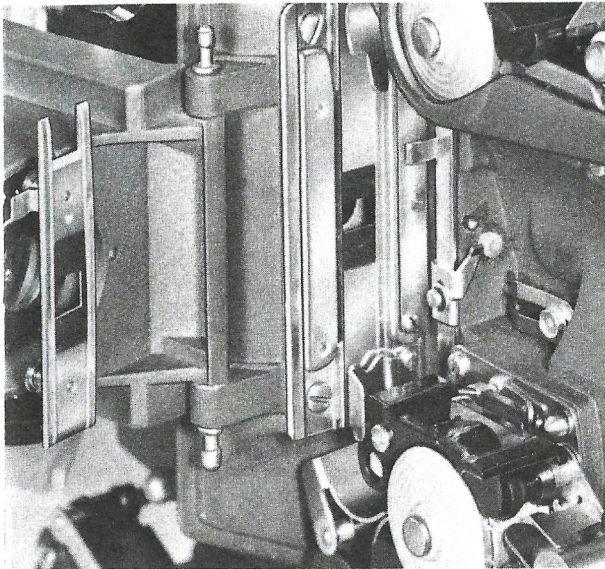
CARE AND MAINTENANCE

This Bell & Howell Filmosound projector has been specially designed to give maximum trouble-free service. It is factory lubricated and requires no further oiling by the user. In addition, all critical bearings have a permanent-type lubricant to provide extended service and long life. Many of the wear parts are service-station adjustable which helps to eliminate the need for eventual replacement.

Instructions on simple cleaning and lamp replacement are given on the following pages. In addition, many owners follow our suggestion that their projectors be cleaned and adjusted periodically even though the unit seems to be in first-class condition. The cost of this service by a Bell & Howell Factory Service Center or approved service station is nominal and is worth a great deal in terms of worry-free and dependable operation.

CLEANING THE FILM PATH—To prevent damage to the film, all surfaces that contact the film must be cleaned frequently. Swing open the **Lamp Housing** (Models 1590 & 1592).

Wipe all threading guides with a soft cloth or brush moistened with any naphtha base agent such as lighter fluid. Remove the **Exciter Lamp Cover** as described on page 10. Clean the **Sound Drum** and the film guide that is part of the **Exciter Lamp Cover**. Gently clean both sound drum stabilizing rollers. Remove any loose particles that may have become lodged anywhere in the film threading path.

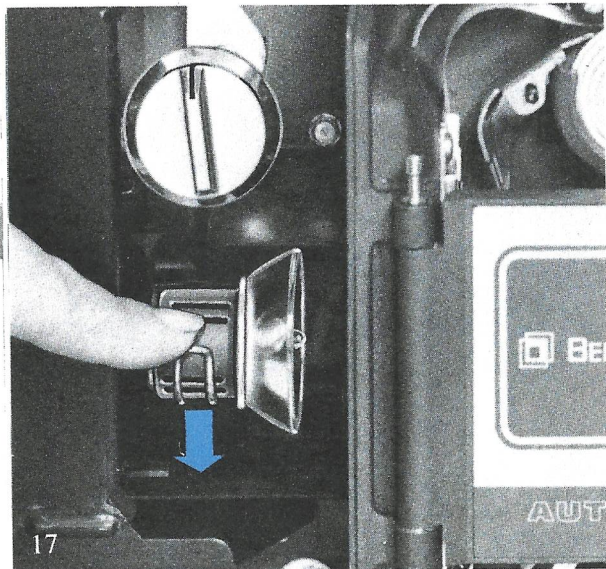
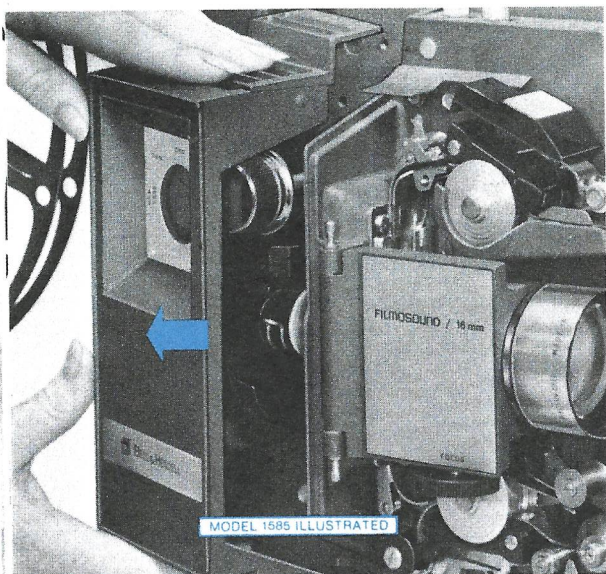


CARE AND MAINTENANCE (continued)

TO CLEAN THE APERTURE AND PRESSURE PLATES—Swing the **Lens Housing** out by pulling the front of the lens toward you. Gently wipe the aperture and pressure plates with a cloth moistened with the agent to remove any dirt or emulsion that may have accumulated. Also clean the aperture side tension rails and the aperture opening. Be sure to press in on the side tension rail and clean this area of the aperture plate. When the cleaning is completed, swing the **Lens Housing** back into position and snap it closed. Be sure the pressure plate seats properly when closing the housing.

TO CLEAN THE PROJECTION LENS—If the lens locking screw has been installed (see page 3), back it out far enough with the Bristol wrench so the lens can be removed. Turn the **Focus Knob** to the left until the lens is moved out as far as it will go, then grasp the lens barrel and remove it from the housing. Using a lens tissue or soft cloth moistened with lens cleaner, wipe the dust and fingerprints from the front and rear glass surfaces. When the lens is clean, insert it back into the **Lens Housing**, turning the **Focus Knob** to the right to engage the lens. If the lens locking screw was used, turn it back in to secure the lens.

Once the cleaning is completed, securely close the **Lens Housing**. Swing shut the **Lamp Housing** on Models 1590 & 1592.



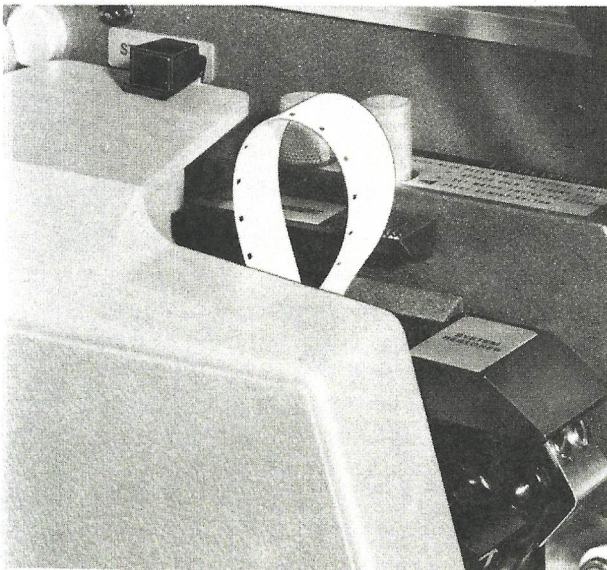
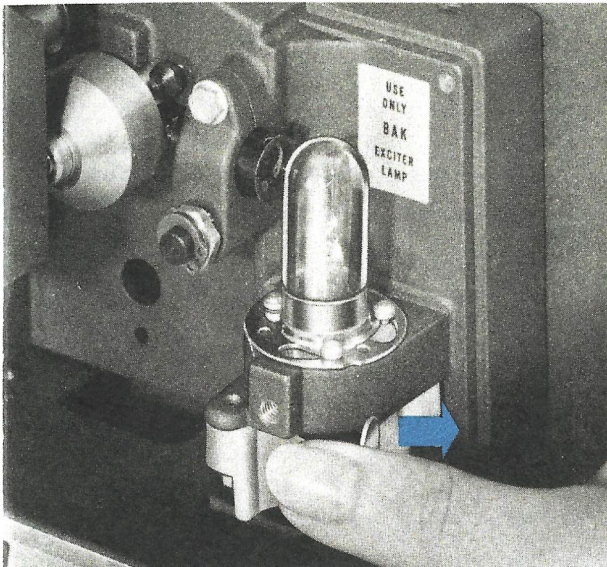
CARE AND MAINTENANCE (continued)

TO REPLACE THE PROJECTION LAMP—

1. Turn the **Motor/Lamp Switch** to OFF and disconnect the power cord. Allow the lamp to cool thoroughly.
2. On Model 1585—remove the **Lamp Housing** by holding it by both the top and bottom and pulling it straight out from the projector. On Models 1590 and 1592, swing the hinged **Lamp Housing** out and to the rear.
3. Swing the lamp holder clamp downward. Grasp the lamp by the black rear portion and pull it straight out. **CAUTION:** If the lamp is still warm or hot, use a glove or heavy cloth to hold the lamp base.
4. Insert the new lamp, reflector forward, by aligning the pins with the socket and pushing straight in. Push the lamp clamp back up until it snaps into position.
Models 1592 and 1585 use ASA Code EMM lamps.
Model 1590 uses ASA Code BHB lamp.
5. On Model 1585—replace the **Lamp Housing** by first placing the round opening over the **Motor/Lamp Switch**, then push firmly toward the projector so that the clip will snap into place to hold the housing on firmly. On Models 1590 and 1592, swing the **Lamp Housing** closed, insuring that it has snapped firmly into place.

TO REPLACE THE EXCITER LAMP—

1. Turn the **Motor/Lamp Switch** to OFF and disconnect the power cord.
2. Loosen the screw holding the **Exciter Lamp Cover** in place and pull the cover straight out. Note the registration pins that align the cover.



CARE AND MAINTENANCE (continued)

3. Move the **Lamp Lock Lever** to the right to release the lamp. Then rotate the lamp counterclockwise and lift it off of the guide pins.
4. Place the new lamp (ASA Code **BAK**) over the guide pins and rotate it clockwise. Move the **Lamp Lock Lever** to the left to lock the lamp base firmly in place. Note that the notch in the lamp base flange should be facing forward when installing the new lamp.
5. Replace the **Exciter Lamp Cover** by matching the two registration pins to the two holes in the projector. When the cover is firmly seated against the projector, tighten the screw.

FILM PROTECTION—Your projector is designed with special features to help protect your valuable film. Film will be forced up and out of the projector's threading mechanism if any of the following irregularities occur: film splice breaks; film is misthreaded; obstruction hampers the threading system; or film end is not trimmed properly with the **Film Trimmer**. If film is ejected from the threading system, **IMMEDIATELY** turn the **Motor/Lamp Switch** OFF and remove the film for inspection and repair if needed. Inspect the complete film threading mechanism for any obstruction. After the film has been repaired and the mechanism checked, rethread the film.

INTERNAL PROJECTOR SERVICING—It is recommended that the user does not remove the back cover of the projector as there are no user-serviceable parts inside. All parts within the projector should be serviced by a Bell & Howell Factory Service Center or approved service station.

PROJECTIONIST'S TROUBLE-SHOOTING LIST ...

PROBLEM

CHECK LIST

1. Projector will not operate.

- Is the power cord properly connected to the electrical outlet?
- Test the electrical outlet with an ordinary lamp or other electrical device (known to be in working order) to be sure current is reaching the outlet.
- If a 3 to 2 wire adapter plug is used, be certain the ground is securely attached to the screw on the wall plate socket.

2. Film does not thread automatically.

- Is the **Autoload Lever** ② pushed forward to the threading position and the **Motor/Lamp Switch** set to FORWARD ?
- Is the film leader in good condition?
- Has the end of the leader been trimmed with the **Film Trimmer**?
- Is the **Lens Housing** closed, the **Exciter Lamp Cover** firmly in place, and the film threading path free of film clips and obstructions?
- Check that the **Run/Still Control** (Model 1592 ONLY) is in the RUN position.

3. The exciter lamp lights, but no sound comes from the speaker.

- Is the film threaded properly?
- Did you turn up the **Volume Control**?
- Does the film have an adequate soundtrack? To check this, proceed as follows: Remove the film from the projector completely. Turn the **Motor/Lamp Switch** to FORWARD . Check that the **Run/Still Control** (Model 1592 ONLY) is in RUN . Turn the **Volume Control** all the way up. Pass a card swiftly back and forth between the **Sound Drum** and the lens back of the exciter lamp. If a thumping noise is heard from the speaker, the projector's sound system is working properly—the sound is missing from the film itself.

-
- | | |
|--|--|
| 4. The exciter lamp does not light and no sound is heard from the speaker. | <ul style="list-style-type: none">• Is the exciter lamp burned out? If so, remove the power cord from the outlet and replace the lamp. Check that the Motor/Lamp Switch is in the FORWARD position and that the Run/Still Control (1592 ONLY) is in RUN. <i>NOTE:</i> The amplifier and exciter lamp turn on (no warm-up time needed) when the Motor/Lamp Switch is turned to FORWARD.• Check external speaker or speakers for 4 OHM minimum load. Turn amplifier 'OFF' for a few seconds. |
| <hr/> | |
| 5. Sound volume is not adequate. | <ul style="list-style-type: none">• Is the Volume Control advanced to the maximum position?• Is the line voltage between 110-129 volts 60 Hz AC?• Is the film clean? Dirty or imperfect film will not produce full sound volume.• Is the exciter lamp filament damaged? If this is possible, disconnect the power cord and replace the lamp. |
| <hr/> | |
| 6. Sound quality is unsatisfactory or garbled. | <ul style="list-style-type: none">• Is the film tight around the Sound Drum?• Is the Tone Control set improperly for the projection room or type of sound on the film?• Have you tried the suggestions previously listed for inadequate sound volume?• Check speed setting; the projector speed and the speed at which your film picture and sound were recorded must correspond. |
| <hr/> | |
| 7. No picture appears on the screen. | <ul style="list-style-type: none">• Is the Motor/Lamp Switch turned to the PROJECT position?• Is the projection lamp burned out? If so, replace the lamp following the instructions on page 17. |
| <hr/> | |
| 8. The picture brilliance seems inadequate or picture seems fuzzy. | <ul style="list-style-type: none">• Is the line voltage correct?• Can the room be darkened further or the picture size reduced? Projection distances should be minimized if the room cannot be darkened properly.• Is the projection lens clean? See the lens and aperture cleaning instructions on page 16.• Is the projection lamp seated properly in the socket? |
-

FILM CONDITION AND YOUR AUTOLOAD PROJECTOR

Your projector has been designed to accept 16mm film in virtually every conceivable condition. There are, however, certain film irregularities that the projector may not handle properly or which may cause threading difficulties.

FILM LEADER—The first three feet of the film (the leader) is very important when used in an Autoload projector. If there is any doubt about leader condition, splice on new leader material.

Dry film becomes brittle and has a tendency to crack and break. The film end should be replaced with new leader and in many cases all of the film on the reel should be cleaned and re-lubricated.



Marked leader, such as leader with tape, staples, grease pencil, or identifying marks on it should be corrected or replaced.

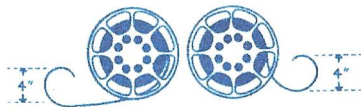
Torn perforations, whether at the leader end of the film or within the reel, should be cut out. Replace with new leader at the start of the film.



Buckled or warped film should be replaced with new leader. Check that the warp is no more than the example shown.



Film curl should be checked. If the curl is tighter than the conditions shown (note the examples are for curl in each direction), replace the leader.



SPLICES—If a splice should break in the middle of a showing, stop the projector, trim the end of the film from the supply reel, rethread the projector, and continue the show using another take-up reel. When rewinding the film, stop where the break occurred and resplice it.

Buckled or warped splices should be corrected whenever they are found to prevent future problems.

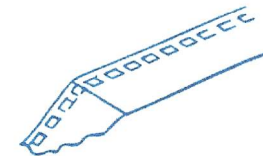


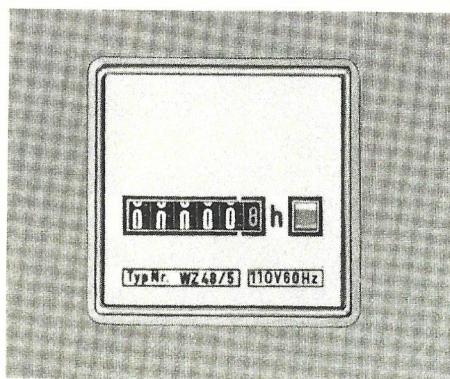
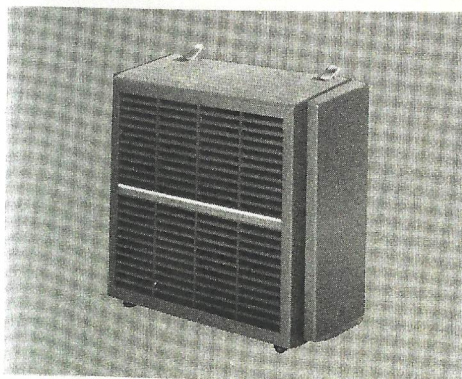
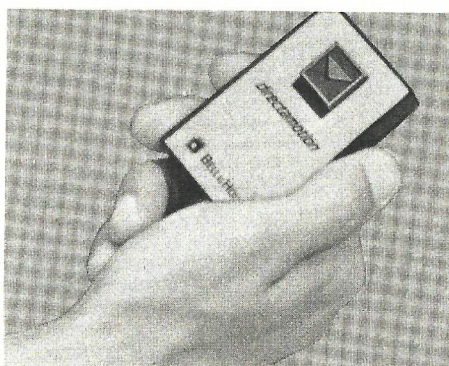
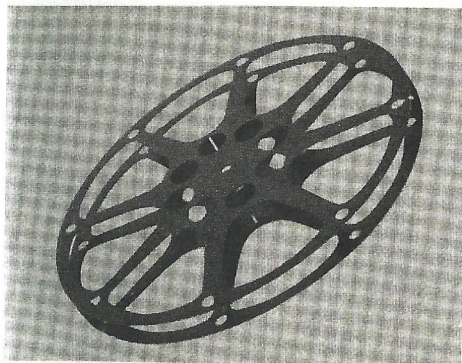
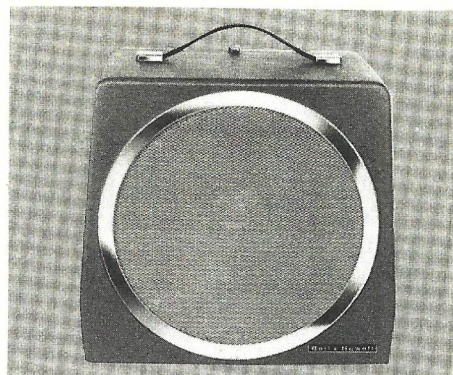
Misaligned splices may cause projection problems, especially if they are in the leader portion of the film. Resplice correctly.

Stapled splices may be convenient for continuing a show but they should be taken out before the film is rewound or reshown. A stapled splice is a certain jam if it runs through the mechanism.

Tape splices should be done carefully and checked for perfect alignment with the sprocket holes in the film.

TRIMMING THE FILM END—Film used for the first time in the projector must be trimmed using the **Film Trimmer** on the front of the **Exciter Lamp Cover**. Any ragged end, bend, or extremely tight curl must be cut off to allow proper film threading.





ACCESSORIES FOR ADDED CONVENIENCE

PROTECTIVE COVER (Catalog No. 44468)—Slips over the projector for protection against dust and damage while carrying or storing. Has a pocket for a large take-up reel.

ORCHESTRICON II SPEAKER (Catalog No. 012568)—Accessory 12" speaker provides the ultimate in extension sound. Complete with 50' of cord and an automatic cord reel.

FILM REELS (1200' Cat. No. 01871; 1600' Cat. No. 01873; 2000' Cat. No. 03727)—All-metal construction, for extended showings. 400' reels also available.

DIRECTAMOTION REMOTE CONTROL (Catalog No. 014128)—FOR MODEL 1592 ONLY—Allows the operation of the Directamotion motion advance feature from a distance. Plugs into the socket on the rear of the unit.

SPEAKER COVER (Catalog No. 016507)—A convenient extension speaker that doubles as the machine cover for maximum portability and storage convenience. Complete with 35' self-storing cord.

HOUR METER (Catalog No. 016538)—This instrument is used to accurately determine projector utilization, lamp longevity and projector performance. Permits accurate scheduling of projector maintenance.

ACCESSORY LENSES



FILMOVARA® ATTACHMENT (Catalog No. 020251)—Designed to screw into the front of the Bell & Howell 1.5", 2", 2.5" or 3" lenses, provides variable image sizes to fit the projection situation. See page 24 for the picture sizes possible.

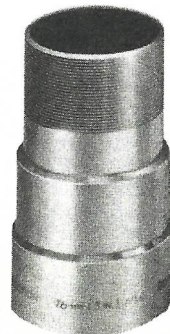


ANAMORPHIC LENS (Catalog No. 204440)—This accessory lens needs no adapter and fits Bell & Howell 1.5", 2", 2.5" and 3.0" lenses. Doubles the width of the projected image (not the height) and is used for showing 16mm wide-screen films.

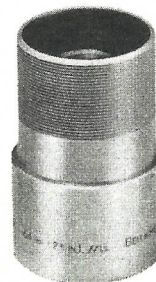
OTHER ACCESSORY LENSES—The following sizes are available for added projection versatility:



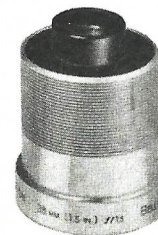
4" f/1.6 Lens
(Catalog No. 201004)



3" f/1.6 Lens
(Catalog No. 204443)



2.5" f/1.5 Lens
(Catalog No. 204442)



1.5" f/1.5 Lens
(Catalog No. 204441)



1" f/1.9 Lens
(Catalog No. 201082)



.625 (5/8") f/2.1 Lens
(Catalog No. 201355)

projection table

1.5" LENS
WITH FILMOVARA
ATTACHMENT

2.0" LENS
WITH FILMOVARA
ATTACHMENT

3.0" LENS
WITH FILMOVARA
ATTACHMENT

LENS FOCAL LENGTH*	DISTANCE IN FEET FROM SCREEN TO PROJECTOR													
	8'	10'	12'	15'	20'	25'	30'	35'	40'	45'	50'	60'	75'	100'
	Upper Dimension is Width of Picture							Lower Dimension is Height of Picture						
.625"	4'9"	5'11"	7'2"	9'0"	12'0"									
	3'6"	4'5"	5'4"	6'8"	8'11"									
1"	2'11"	3'8"	4'5"	5'7"	7'5"	9'4"	11'3"	13'1"						
	2'2"	2'9"	3'4"	4'2"	5'7"	6'11"	8'4"	9'9"						
1.3"	2'4"	2'11"	3'6"	4'5"	5'11"	7'5"	8'10"	10'5"						
	1'9"	2'2"	2'8"	3'4"	4'5"	5'6"	6'8"	7'10"						
1.5"	1'11"	2'5"	2'11"	3'8"	4'11"	6'2"	7'6"	8'9"	10'0"	11'3"	12'5"			
	1'5"	1'10"	2'2"	2'9"	3'8"	4'7"	5'7"	6'6"	7'5"	8'4"	9'4"			
1.75"	1'5"	2'2"	2'6"	3'2"	4'3"	5'5"	6'6"	7'7"	8'8"	9'10"	10'9"	12'5"	15'5"	
	1'1"	1'7"	1'11"	2'5"	3'2"	4'0"	5'0"	5'8"	6'6"	7'3"	8'1"	9'2"	11'5"	
1.75"	1'5"	2'2"	2'6"	3'2"	4'3"	5'5"	6'6"	7'7"	8'8"	9'10"	10'9"	12'5"	15'5"	
	1'1"	1'7"	1'11"	2'5"	3'2"	4'0"	5'0"	5'8"	6'6"	7'3"	8'1"	9'2"	11'5"	
2.0"		1'10"	2'2"	2'9"	3'8"	4'8"	5'7"	6'6"	7'5"	8'5"	9'4"	11'3"	14'0"	18'9"
		1'4"	1'8"	2'1"	2'9"	3'5"	4'2"	4'10"	5'7"	6'3"	6'11"	8'4"	10'5"	13'11"
2.25"		1'7"	1'11"	2'6"	3'4"	4'0"	5'0"	5'10"	6'8"	7'7"	8'4"	10'1"	13'7"	16'11"
		1'2"	1'5"	1'10"	2'6"	3'1"	3'9"	4'4"	5'0"	5'8"	6'3"	7'7"	10'2"	12'8"
2.6"		1'4"	1'8"	2'1"	2'9"	3'7"	4'3"	5'0"	5'9"	6'5"	7'2"	8'9"	10'8"	14'6"
		1'1"	1'3"	1'7"	2'1"	2'8"	3'3"	3'9"	4'3"	4'8"	5'5"	6'6"	8'1"	10'9"
3.0"						3'1"	3'8"	4'4"	4'11"	5'7"	6'2"	7'5"	9'4"	12'6"
						2'3"	2'9"	3'3"	3'8"	4'2"	4'7"	5'7"	6'11"	9'3"
3.4"						2'6"	3'1"	3'6"	4'1"	4'7"	5'2"	6'3"	7'7"	10'4"
						1'10"	2'3"	2'8"	3'1"	3'6"	3'9"	4'7"	5'9"	7'8"
4.0"						2'3"	2'9"	3'3"	3'8"	4'2"	4'8"	5'7"	7'0"	9'4"
						1'8"	2'1"	2'5"	2'9"	3'1"	3'5"	4'2"	5'2"	6'11"

*1.5" lens with Filmovara = 1.3" to 1.75" focal length range.

2.0" lens with Filmovara = 1.75" to 2.25" focal length range.

3.0" lens with Filmovara = 2.6" to 3.4" focal length range.

Note: Use of the Anamorphic Lens doubles the width of the picture.

Color band = standard focal length lenses.
Brackets indicate focal length range
with Filmovara attachment.



AUDIO-VISUAL PRODUCTS DIVISION

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